REMARKS

Reconsideration is requested.

Claim 34 has been canceled, without prejudice. Claims 32, 33 and 35-61 are pending. The claims have been amended, without prejudice. The amendments find support throughout the specification, including the figures. Claims 58 and 59 have been withdrawn from consideration.

The objection to claims 32-57, 60 and 61 stated in §1 of page 2 of the Office Action dated June 8, 2011 is obviated by the above amendments. Withdrawal of the objection is requested.

The objection to claim 34 is moot in view of the above.

The Section 112, first paragraph "written description", rejection of claims 32-57, 60 and 61 is traversed. Reconsideration and withdrawal of the rejection are requested in view of, for example, the paragraph spanning pages 64-65 and the paragraph spanning pages 65-66 of the specification. One of ordinary skill in the art will appreciate that the applicants were in possession of the claimed invention at the time the application was filed. Withdrawal of the rejection is requested.

The following art has been relied on by the Examiner in the Office Action of June 8, 2011 and the art will be referred to herein by the following document ("D") numbers for convenience:

D1 - Gaudiana (U.S. Patent Application Publication No. 20030140959);

D2 – Wanlass (U.S. Patent No. 5,322,572);

D3 – Boschloo ("Optimization of dye-sensitized solar cells prepared by compression method" Sept 2001, Journal of Photochemistry and Photobiology A: Chemistry 148 pp 11-15);

D4 - Gay (U.S. Patent No. 4,461,922);

D5 - Gaudiana (U.S. Patent Application Publication No. 20030230337);

D6 - Chiba (U.S. Patent Application Publication No. 20020134426);

D7 - Linquist (WO9963599);

D8 - Nazeeruddin ("Investigation of Sensitizer Adsorption and the Influence of Protons on Current and Voltage of a Dye-Sensitized Nanocrystalline TiO_2 Solar Cell" J. Phys. Chem. B 2003,107, 8981-8987);

D9 - Gratzel ("Perspectives for Dye-sensitized Nanocrystalline Solar Cells" Prog. Photovolt. Res. Appl. 8, 171-185 (2000)); and

D10 - Sakurai (U.S. Patent No. 6,310,282).

The following rejections are traversed:

the Section 103 rejection of claims 32-34, 40-47, 49, 50 and 60 over D1 and D2;

the Section 103 rejection of claims 35 and 36 over D1, D2, D3 and D4;

the Section 103 rejection of claims 37 and 38 over D1, D2 and D5;

the Section 103 rejection of claim 39 over D1, D2, D5 and D6,

the Section 103 rejection of claims 48 and 51-54 over D1, D2 and D6;

the Section 103 rejection of claims 55-57 over D1, D2 and D7;

the Section 103 rejection of claim 61 over D1, D2, D6, D8 and D9; and

the Section 103 rejection of claims 32-34 over D10 and D2.

Reconsideration and withdrawal of the Section 103 rejections are requested in view of the following and the above.

D1 describes a photovoltaic cell wherein preferably the conductive **152** and insulative **180** regions of the electrical connection layers **105**, **107** include transparent materials. See ¶[0021] of D1. Moreover, D1 teaches that the photovoltaic module **10** of the reference is "significantly light transmitting" wherein all of the constituent layers and regions of the photovoltaic module **10** is formed to be significantly light transmitting. . See ¶[0022] of D1. D1 therefore describes modules wherein preferably the first substrate and second substrate identified by the Examiner (i.e., **100** and **102** in Figure 5I of D1 (see page 4 of the Office Action dated June 8, 2011)) are transparent or are each light receiving sides.

As substantially all of the materials of D1 are transparent, and light receiving, one of ordinary skill would not have been motivated by D1 to have made the photoelectric conversion elements different in order to provide the same amount of electric currents, as required by the presently claimed invention. Specifically, as described in the present specification, such as in the paragraphs spanning pages 41-42 of the specification, the differences in the elements can be used to correct for reduced conversion efficiencies resulting from a non-light receiving side of the claimed invention.

As admitted by the Examiner on pages 5-6 of the Office Action dated June 8, 2011, D1 fails to teach the differences in the elements of the claimed invention. D1 also fails to suggest such a difference as, for example, all the components of D1 are

preferably made of materials which transmit light and the two substrates of the modules of D1 are light receiving sides of the module.

In *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 415 (2007), the Supreme Court emphasized "an expansive and flexible approach" to the obviousness question. Nonetheless, the Court reaffirmed that "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *Id.*, at 418. The Court stated "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does ... because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known. *Id.*, at 418-419.

There is no suggestion in D1 to have made the elements of the presently claimed invention.

The secondary reference, D2, fails to cure the deficiencies of D1. D2 does not relate to dye-sensitized cell modules of the presently claimed invention or of D1. D2 relates to monolithic multijunction tandem photovoltaic solar cells comprising layers of InP and GaInAsP and containing a prismatic cover layer. The GaInAs subcell of D2 is lattice matched with the InP layer and the InP subcell has a larger energy band gap than the first subcell of D2 One of ordinary skill would not have been motivated by D2 to alter or supplement the teachings of D1 to make the presently claimed invention.

The passing reference in D2 to "adjusting the areas of the upper and lower subcells to match the current densities of the two subcells" (see column 8, lines 50-51 of D2) and "In the series connected type of tandem solar cells, there is current matching of the two subcells." (see column 2, lines 54-56 of D2), would not have suggested to one of ordinary skill in the art to have made the claimed invention from D1.

The appreciation that the size of elements, in unrelated components, could be altered would not have led to alteration of the elements of D1 as an "optimization" in the manner suggested by the Examiner.

D2 also states that "In another specific embodiment of the solar cell illustrated in FIG. 2, the solar cell can be optimized by adjusting the areas of the upper and lower subcells to match the current densities of the two subcells." See column 8, lines 48-51. The applicants understand the Examiner to believe that the claimed invention would have allegedly been obvious by incorporating the technique of D2 disclosing "current matching of the two series connected subcells" into D1. However, the two series connected subcells of D2 are the top (upper) subcell 30 and the bottom (lower) subcell 40 in the tandem photovoltaic solar cell of FIG. 2 wherein these subcells are aligned in the direction of the thickness of the tandem photovoltaic solar cell (the light incident direction).

In the claimed invention however, the two neighboring cells (first photoelectric conversion element and second photoelectric conversion element) both electrically connected in series are arranged orthogonal to the thickness of the dye-sensitized solar cell module (orthogonal to the light incident direction).

The claimed invention would not have been obvious in view of the cited art.

The dependent claims rejected over the combination of D1 and D2 are patentable over the cited combination of art for similar reasons.

Withdrawal of the Section 103 rejection of the claims over the combination of D1 and D2 is requested.

The Section 103 rejection of claims 35 and 36 over the combination of D1, D2, D3 and D4 is traversed. The additional teaching of D3 and D4 fail to cure the deficiencies of the combination of D1 and D2 noted above. Further, the unexpected benefit of the presently claimed invention (i.e., the production of an effective power as a result of the same current from the first and second photoelectric conversion elements of the claimed invention) would not have been obvious from the cited combination of art. Withdrawal of the Section 103 rejection is requested.

The Section 103 rejection of claims 37 and 38 over the combination of D1, D2, and D5 is traversed. The additional teachings of D5 fail to cure the deficiencies of the combination of D1 and D2 noted above. Withdrawal of the Section 103 rejection is requested.

The Section 103 rejection of claim 39 over the combination of D1, D2, D5 and D6 is traversed. The additional teaching of D5 and D6 fail to cure the deficiencies of the combination of D1 and D2 noted above. Further, the unexpected benefit of the presently claimed invention (i.e., the production of an effective power as a result of the same current from the first and second photoelectric conversion elements of the

claimed invention) would not have been obvious from the cited combination of art. Withdrawal of the Section 103 rejection is requested.

The Section 103 rejection of claim 48 and 51-54 over the combination of D1, D2 and D6 is traversed. The additional teaching of D6 fail to cure the deficiencies of the combination of D1 and D2 noted above. Further, the unexpected benefit of the presently claimed invention (i.e., the production of an effective power as a result of the same current from the first and second photoelectric conversion elements of the claimed invention) would not have been obvious from the cited combination of art. Withdrawal of the Section 103 rejection is requested.

The Section 103 rejection of claims 55-57 over the combination of D1, D2 and D7 is traversed. The additional teaching of D7 fail to cure the deficiencies of the combination of D1 and D2 noted above. Further, the unexpected benefit of the presently claimed invention (i.e., the production of an effective power as a result of the same current from the first and second photoelectric conversion elements of the claimed invention) would not have been obvious from the cited combination of art. Withdrawal of the Section 103 rejection is requested.

The Section 103 rejection of claim 61 over the combination of D1, D2, D6, D8 and D9 is traversed. The additional teachings of D6, D8 and D9 fail to cure the deficiencies of the combination of D1 and D2 noted above. Further, the unexpected benefit of the presently claimed invention (i.e., the production of an effective power as a result of the same current from the first and second photoelectric conversion elements

of the claimed invention) would not have been obvious from the cited combination of art. Withdrawal of the Section 103 rejection is requested.

The Section 103 rejection of claims 32-34 over the combination of D10 and D2 is traversed. The combination of D10 and D2 fails to teach or suggest the presently claimed invention for reasons similar to those noted above with regard to the combination of D1 and D2. There was no motivation in the cited combination of art to have made the presently claimed invention. Further, the unexpected benefit of the presently claimed invention (i.e., the production of an effective power as a result of the same current from the first and second photoelectric conversion elements of the claimed invention) would not have been obvious from the cited combination of art.

As shown in FIG. 5, a dye-sensitizing photovoltaic cell of D10 comprises a first photovoltaic cell unit 78 between a pair of transparent substrates 71 and 81, and a second photovoltaic cell unit 88 between a pair of transparent substrates 81 and 89 from a tandem structure. That is, the two neighboring cells (first and second photovoltaic cell units 78 and 88) are connected in series in the direction of the thickness of the tandem photovoltaic solar cell (the light incident direction).

Therefore, even if D10 and D2 were combined, the feature of the claims that the two neighboring cells (first photoelectric conversion element and second photoelectric conversion element) both electrically connected in series which are arranged orthogonal to the thickness of the dye-sensitized solar cell module would not have been obtained or obvious.

Withdrawal of the Section 103 rejection is requested.

The claims are submitted to be in condition for allowance and a Notice to that effect is requested. The Examiner is requested to contact the undersigned, preferably by telephone, in the event anything further is required.

Respectfully submitted,

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